IEEJ e-NEWSLETTER

No. 61

(Based on Japanese No. 140)

Published: May 15, 2015

The Institute of Energy Economics, Japan
IEEJ e-Newsletter Editor: Yukari Yamashita, Director
IEEJ Newsletter Editor: Ken Koyama, Managing Director
Inui Bldg. Kachidoki, 13-1 Kachidoki 1-chome, Chuo-ku, Tokyo 104-0054
Tel: +81-3-5547-0211 Fax: +81-3-5547-0223

Contents

Summary

1. Discussions on the Energy Mix

On April 28, at the meeting of the Subcommittee on Long-term Energy Supply-Demand Outlook, a detailed and quantitative framework developed based on the Strategic Energy Plan's overall energy supply-demand structure for 2030 was presented.

2. Developments in Nuclear Power

A petition for provisional disposition order to block the operation of Takahama Units 3 and 4 was approved by a court, while that for Sendai Units 1 and 2 was rejected. The impact of these contradicting decisions on reaching a national consensus and restarting the plants must be closely monitored.

3. LNG Market

The acquisition of BG by Shell will have a great impact on the LNG market, including selection of their North American LNG projects, and raising the presence of Shell as an significant investor in new LNG projects.

4. Discussions on Japan's Draft Contribution Enter the Final Stretch

Heading for the G7 Summit in June, the final stage of the discussions on the Draft Contribution must set a GHG reduction target which is in line with the energy mix and energy conservation measures, and which is also economically rational.

5. Germany Introduces Renewable Energy Auctions; Would It Work in Japan?

Germany is introducing a trial auction system for solar PV. If Japan were to introduce the system, which is a possibility, it must first establish a target for the introduction of renewable energies, and also consider its course of action now that there is little scope remaining for introducing more solar PV.

1. Discussions on the Energy Mix

Akira Yanagisawa, Senior Economist
The Energy Data and Modelling Center

The Subcommittee on Long-term Energy Supply-Demand Outlook held its fifth to eighth meetings between the end of March and April 28. The topic of each meeting was the power generation mix for the fifth meeting, the efficient use of energy for the sixth meeting, a review of previous topics for the seventh meeting, and the energy mix for the eight meeting. Of the meetings, the eighth received the most attention. On the previous day, April 27, the Working Group for Verifying Generation Cost had completed a draft report on the power generation costs for various model plants in 2014 and 2030. Based on this information, and in line with the basic principles of the Strategic Energy Plan, a detailed and quantitative framework of the overall energy supply-demand structure in 2030 was presented at this meeting (the estimated final energy consumption and final electricity consumption of each sector had been presented in the discussions up to the seventh meeting).

The Framework Proposal for the Long-term Energy Supply-Demand Outlook sets, premised on safety, specific policy goals concerning the 3E+S policy: (1) increasing the self-sufficiency rate above the level before the Great East Japan Earthquake (approx. 25%), (2) lowering electricity costs from the current level, and (3) leading global efforts by pursuing GHG emission reduction goals that match those of Western countries. Accordingly, as the energy supply-demand outlook for 2030, the Draft Framework set the final energy consumption at 326 GL of crude oil equivalent, primary energy supply at 489 GL, and self-sufficiency rate at 24.3%. Energy-related CO_2 emissions were estimated to be 25% lower than 2013 levels (down 21.9% from the total GHG emission levels for 2013).

Regarding the power generation mix, which the members actively discussed, the targets for renewables and nuclear contain some margin, namely 22-24% and 20-22%, respectively, of a total power generation of 1,065 TWh, with any additional renewables to replace nuclear if they become available. Regarding thermal power, the targets for LNG- and coal-fired are set at 27% and 26%, respectively. The base load power source accounts for just under 60% at 56%, a value which the Outlook clearly states would "lower the electricity costs from current levels" (down 2-5% from JPY9.7 trillion in 2013).

Members made such comments as, "the ratio of renewables is its minimum level and should be increased", "the energy conservation goal is too ambitious", and "electricity tariffs should be lowered to pre-earthquake levels". There was even a comment that this power generation mix does not meet the "official commitment" of the Strategic Energy Plan including less dependency on nuclear. But in general, most members agreed that the generation mix is a well-balanced goal to work towards, and the Draft Framework was entrusted to Chairman Sakane. Several discussions are to be held to finalize the draft report.

The Draft Framework mentions "leading global efforts by pursuing GHG emission reduction goals that match those of Western countries". It is important for the target to be appropriate, reasonable, and necessarily and sufficiently ambitious for mitigating climate change. However, with the IPCC presenting other options besides the 450 ppm scenario, and based on the lessons learned from finalizing the Kyoto Protocol, it is also important for the target to be reasonable and economically rational considering both the international and domestic situations.

2. Developments in Nuclear Power

Tomoko Murakami, Manager
Nuclear Energy Group, Strategy Research Unit

On April 14, the Fukui District Court approved the petition for a provisional disposition order to block the operation of Kansai Electric's Takahama Units 3 and 4. The Units now cannot be restarted unless the provisional ruling is withdrawn. Three days later, on April 17, the Kagoshima District Court rejected a similar application for a provisional ruling to block the operation of Kyushu Electric's Sendai Units 1 and 2. Both the Sendai and the Takahama plants have been approved by the Nuclear Regulation Authority (NRA) as meeting the Agency's new regulation standards. Nevertheless, the courts issued diametrically opposed decisions through the judicial proceedings.

Kansai Electric has already filed a formal objection with the Fukui District Court against the decision, and according to media reports, the first court hearing is expected on May 20. With the independent nuclear watchdog, which has expertise and authority over nuclear safety, and the courts making opposite decisions on nuclear safety, the outcome of the judicial proceedings will significantly impact the discussions on forming a national consensus and the prospects for restarting the power plants.

On May 11, METI's Working Group for Verifying Generation Cost held its seventh meeting to discuss how the cost of each power source should be estimated, and the results of the estimation was proposed. The discussions focused on the frequency of accidents at nuclear power plants and the associated cost of accident risks. Considering the cost of additional safety measures and the reduction in the estimated risk of accidents, which halved from 2011 thanks to those safety measures, the cost of nuclear power generation was estimated at 8.8 yen/kWh or 10.1 yen/kWh, with and without government spending, respectively, rising slightly from the 2011 estimate of 8.9 yen/kWh. However, the relative economic competitiveness of nuclear power did not change, as the power generation cost for fossil fuels also increased due mainly to currency fluctuations to approx. 12-14 yen/kWh, while the cost of renewable electricity is still higher than that of coal and nuclear power although it fell slightly due principally to falling solar panel prices.

As the utilities in Japan continue to do all they can to restart their nuclear power plants, new business opportunities are appearing in emerging countries for the nuclear industry. On March 31, the Turkish parliament approved an intergovernmental agreement to construct new nuclear power plants on the Sinop site. The agreement concerns an investment of 22 billion US dollars in total by GDF-Suez, Itochu Corporation and Mitsubishi Heavy Industries on the construction of four ATMEA1 plants (designed by a joint venture of Areva and Mitsubishi Heavy Industries) on the Sinop site, and was approved by Prime Minister Erdogan on April 10. Accordingly, the three companies plan to form a joint venture to launch the project for full-scale design and construction.

More than 18 months have passed since all of Japan's nuclear power plants stopped. In the meantime, nine new plants, including seven in China, have started operation, and a series of new plants are being constructed in India and Russia. In the discussions on the energy mix, we must remember that the loss of expertise and industrial competitiveness caused by the long-term shutdown of nuclear power plants could be irreversible.

3. LNG Market: Shell's acquisition of BG Group

Tetsuo Morikawa, Senior Economist, Manager
Gas Group, Coal & Gas Subunit
Fossil Fuels & Electric Power Industry Unit

On April 8, Shell announced that it had agreed to purchase BG Group for 47 billion pounds (8.4 trillion yen). Generally considered as an oil major, Shell's natural gas output of 1.1 million oil equivalent barrels per day (BOE/D) is in fact close to its oil output of 1.4 million B/D for 2014, which makes "oil & gas major" a more appropriate description for the company. BG Group, on the other hand, produced much more natural gas (0.4 million BOE/D) than oil (0.1 million B/D) in 2014, true to its preferred title of "gas major".

Both companies are major sellers of LNG, with Shell selling 24 million tonnes and BG Group selling 11 million tonnes in 2014, together accounting for as much as 15% of the LNG market. Further, both companies are likely to add even more LNG capacity from projects starting in the next few years, including the capacity already secured by BG in the first LNG project in the US. Hence, the merger of the two companies will have a greater impact on the natural gas and LNG markets than the oil market.

The sudden fall in oil prices from the end of 1997 led to a reorganization of the international oil industry and the birth of the current super-majors such as ExxonMobil, BP and Total. The recent purchase of BG Group by Shell is similar in that it was triggered by the fall in oil prices from the latter half of 2014. One of the purposes of this purchase, besides reducing costs and improving synergies through the rationalization of redundant departments, is to quickly build up additional reserves. Even the super-majors including Shell have been suffering from the recent decline in oil and natural gas output and reserves. Accordingly, more M&A of major independent companies could follow.

Having built up reserves through the merger, it would not be surprising if Shell/BG decides to be selective of its new LNG projects in the US and Canada where both companies have new projects. The new Shell could thus strengthen its presence as an investor in new projects in the medium- to long-term by consolidating the somewhat excessive new project initiatives.

For the new Shell, the future price of oil will be of enormous importance. With the Brent price remaining around $60/bbl in the second half of April, US oil output seems to be peaking. However, the global supply-demand situation remains weak as the supply glut continues. Looking ahead, it is critical how far the market will be affected by geopolitical risks including the situation in Yemen and the flow of money in anticipation of higher volatility and prices.

4. Discussions on Japan's Draft Contribution Enter the Final Stretch

Hiroki Kudo, Assistant to Managing Director
Global Environment and Sustainable Development Unit

With the EU and the US having submitted their Intended Nationally Determined Contribution (INDC) to the UNFCCC Secretariat, Japan is also actively discussing its energy mix, based on which the GHG emissions target beyond 2020 will be considered. The Japanese government indicated its diplomatic policy of presenting the GHG emissions reduction target at the G7 Summit in Germany in June. As a result, the discussions for finalizing a series of important decisions such as Japan's final energy mix at the relevant committee and the GHG emissions reduction target, and the subsequent political decision, are nearing their conclusion.[1]

While the energy mix has long been at the center of the discussions, the GHG reduction target had never been the focus. However, with the EU and the US submitting their respective INDCs at the end of March, there are growing demands that Japan's target should not fall behind those of other countries. As it is essential for the GHG reduction target to reflect both current issues and the future outlook for the supply and demand of energy, this factor is likely to be emphasized in the final stage of the discussions.

The discussions on the energy mix so far have highlighted the importance of energy conservation. As the future of the nuclear power plants remains uncertain, energy conservation is gathering attention because of its impact on energy consumption, which in turn affects all factors of the "3E+S" policy and serves as the denominator of the energy mix. The twelfth Energy Efficiency and Conservation Subcommittee meeting of the Committee on Energy Efficiency and Renewable Energy held on April 17 presented a temporary estimate for energy conservation in 2030. However, the figure suggested even greater energy saving than that presented at the tenth meeting in February, leading to doubts among some members as to its feasibility. Greater energy conservation, as mentioned previously, is desirable as it has positive effects from the 3E+S perspective. On the other hand, it would be of little value if not feasible, including the economic impact, by focusing too much on the energy mix and the GHG reduction target. The last leg of the discussions should not set a high GHG target as the starting point, but seek a conclusion that considers feasibility in the supply and demand of energy.

At the Energy Efficiency and Conservation Subcommittee mentioned above, IEEJ CEO and Chairman Masakazu Toyoda suggested, as a member, that the industrial and conversion sectors need assistance to maintain their international competitiveness, particularly economic assistance such as shorter payout time and facility update subsidies to promote investment in energy conservation in these sectors.

[1] The government's GHG emissions reduction target is not covered in this report due to constraints of the committee meeting date. For information on the target, please refer to the corresponding article dated April 30 on the IEEJ website.

5. Germany Introduces Renewable Energy Auctions; Would It Work in Japan?

Hisashi Hoshi, Board Member, Director
New and Renewable Energy & International Cooperation Unit

Starting in April, Germany is introducing a renewable energy auction system on a trial basis. The country launched the FIT (Feed-in-Tariff) system for renewable energies in 2000 as the decisive solution for promoting renewable energies, and has successfully expanded its renewable capacity, although the sharp rise in the surcharge caused by the introduction of huge amounts of solar PV between 2010 and 2012 has been a problem. In response, the government has repeatedly tweaked the system, including urgently lowering the purchase prices and introducing automatic adjustment of the purchase prices based on the amount of electricity introduced. Spain and Italy also struggled in 2008 and 2011, respectively, by introducing too much renewables too quickly. Concerned about the situation, in April 2014 the European Commission released guidelines on cost-efficient assistance measures for renewable energies, in an effort to introduce competition.

The decision to introduce this auction system was taken last August as part of the revision of the FIT system in line with the European Commission's guidelines. The system targets solar PV capacities of 100 kW-10MW, and will offer for tender an average of 400 MW per year in the next three years. To prevent withdrawal after winning a bid, bidders are required to pay an advance of four euros per kW when submitting a bid, and an additional advance of 50 euros when their project is licensed. Creating an environment for fair competition is expected to help lower the purchase price.

Would this auction system work in Japan? It could be an option for improving the cost efficiency of introducing renewable energies, considering the often-criticized high purchase price and the expected rise in surcharge. However, a few conditions would have to be met for this system to work in Japan. The most urgent issue for Japan is to set a target for renewables introduction. An auction always has a capacity to be offered for tender, and it is not possible to set one without an introduction target. Thus, the ongoing discussions on the energy mix must reach a decision as soon as possible.

Further, for geothermal and wind power, which have a long lead time from launching the business to recouping costs and whose deployed capacity is still limited, a flexible auction system needs to be built. These businesses require a large investment before actually deciding to enter the business, such as for resource evaluations and environmental assessments. Thus, the near-term risks for these businesses must be mitigated by further deregulation, and by setting a relatively high bid price limit for these energies.

Meanwhile, solar PV, which has a short business lead time and a relatively mature market, well-suited to the auction system. However, with 75 GW of equipment capacity already licensed under the FIT system, there is little scope remaining for introducing large additional amounts of solar PV through auction in terms of both available land and grid capacity. This must be taken into account when considering the target amount for auctioning, while also reviewing the rules for interchange of renewable electricity between power companies to overcome the grid capacity limit.

Past IEEJ Events

Energy Indicators of Japan

IEEJ Homepage Top

Back Numbers of *IEEJ e-Newsletter*

Back Numbers of *IEEJ Newsletter* (Original Japanese Version - Members Only)